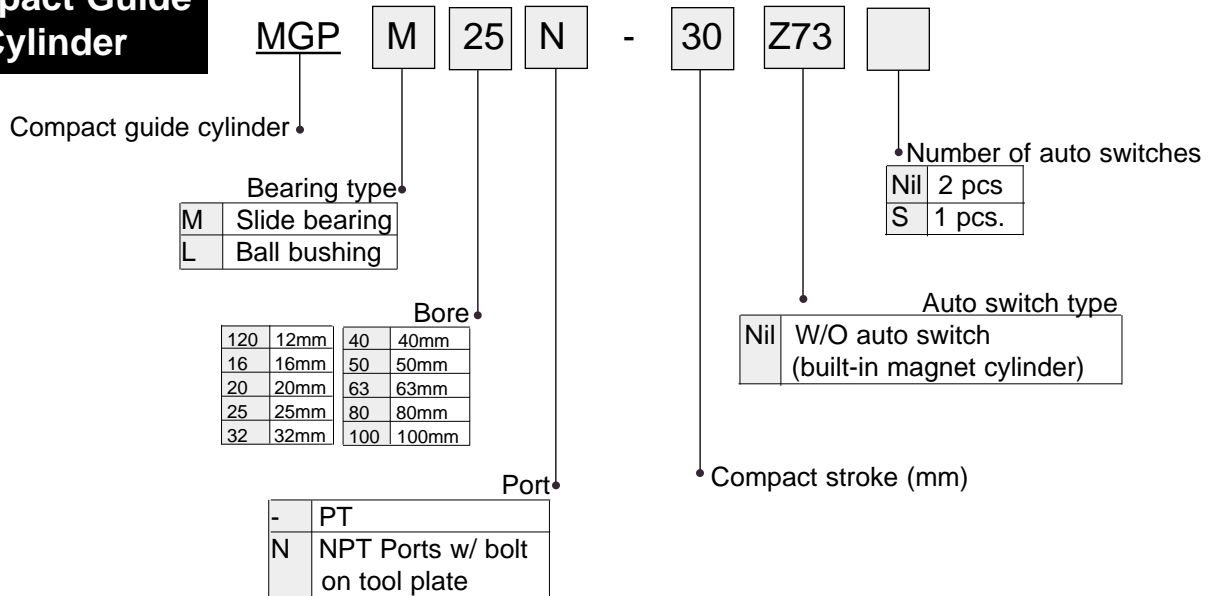


HOW TO ORDER

**Compact Guide Cylinder**



**Applicable auto switches**

Type	Special function	Electrical entry	Indicator light	Wiring (output)	Load voltage		Auto switch model		Lead wire length (m) <sup>Note 1)</sup>			Applicable load		Detailed specifications
					DC	AC	Electrical entry direction		0.5 (Nil)	3 (L)	5 (Z)			
							Perpendicular	In-line						
Reed switch	—	Grommet	Yes	3 wire	—	5V	—	Z76			—	IC circuit	—	P. 66
				2 wire	24V	12V	100V	—	Z73			—	Relay, PLC	
						5V 12V	100V or less	—	Z80		—	IC circuit		
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	5V 12V	—	Y69A	Y59A			IC circuit	Relay, PLC	P. 67
				3 wire (PNP)				Y7PV	Y7P			—		
				2 wire				Y69B	Y59B			—		
				3 wire (NPN)				Y7NWV	Y7NW			IC circuit		
	Diagnostic indication (2 color indicator)	Grommet	Yes	2 wire	24V	5V 12V	—	Y7PWV	Y7PW			IC circuit	P. 68	
								Y7BWV	Y7BW			—	P. 69	
								—	Y7BA			—	P. 70	
Water resistant (2 color indicator)	—	—	—	—	—	—	—	—	—	—	—	—	—	
Magnetic field resistant (2 color indicator)	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Note 1) Lead wire symbols 0.5m ..... Nil (Example) Y69B  
 3m ..... L Y69BL  
 5m ..... Z Y69BZ

Note 2) Solid state auto switches marked with a " " are produced upon receipt of order.

Note 3) Type D-P5DW cannot be mounted on bore sizes of ø32 or less.



## Specifications

Action	Double acting	
Fluid	Air	
Proof pressure	1.5MPa (217 psi)	
Maximum operating pressure	1.0MPa (145 psi)	
Minimum operating pressure	ø12, ø16	0.12MPa (17 psi)
	ø20 to ø100	0.1MPa (14 psi)
Ambient and fluid temperature	-10 to 60°C (14 to 140°F) with no freezing	
Piston speed	ø12 to ø63	50 to 500mm/s (2 to 19 in/s)
	ø80, ø100	50 to 400mm/s (2 to 15 in/s)
Cushion	Rubber bumper at both ends	
Lubrication	Non-lube	
Stroke length tolerance	+1.5 0 mm	

## Standard Strokes

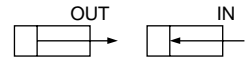
Bore size (mm)	Standard stroke (mm)
<b>12, 16</b>	10, 20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250
<b>20, 25</b>	20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400
<b>32 to 100</b>	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400

## Manufacture of Intermediate Strokes

<b>Modification method</b>	Spacer installation type Spacers are installed in a standard stroke cylinder. • ø12 to 32 : Available in 1mm stroke increments • ø40 to 100: Available in 5mm stroke increments		Special body type (-XB10) A special body is manufactured for the specified stroke. • All bore sizes are available in 1mm increments.	
<b>Part number</b>	Refer to standard part numbers and ordering procedure.		Indicate -XB10 at the end of the standard model no. Refer to P.52 for order made specifications.	
<b>Applicable stroke (mm)</b>	ø12, ø16	1 to 249	ø12, ø16	11 to 249
	ø20, ø25, ø32	1 to 399	ø20, ø25	21 to 399
	ø40 to ø100	5 to 395	ø32 to ø100	26 to 399
<b>Example</b>	Part no.: <b>MGPM20-39</b> A spacer 1mm in width is installed in a <b>MGPM20-40</b> . C dimension is 77mm.		Part no.: <b>MGPM20-39-XB10</b> Special body manufactured for 39mm stroke. C dimension is 76mm.	

Note) The minimum stroke for mounting auto switches is 10mm or more for two switches, and 5mm or more for one switch.

## Theoretical Output



### Auto switch mounting bracket part no. for D-P5DW

Bore size (mm)	Mounting bracket part no.	Notes
40, 50, 63, 80, 100	BMG1-040	Switch mounting bracket Hexagon socket head cap screw (M2.5 x 0.45 x 8 /) 2 pcs. Hexagon socket head cap screw (M3 x 0.5 x 16 /) 2 pcs. Spring washer (nominal size 3)

Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm <sup>2</sup> )	Operating pressure (MPa)								
				0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
12	6	OUT	113	23	34	45	57	68	79	90	102	113
		IN	85	17	26	34	43	51	60	68	77	85
16	8	OUT	201	40	60	80	101	121	141	161	181	201
		IN	151	30	45	60	76	91	106	121	136	151
20	10	OUT	314	63	94	126	157	188	220	251	283	314
		IN	236	47	71	94	118	142	165	189	212	236
25	12	OUT	491	98	147	196	246	295	344	393	442	491
		IN	378	76	113	151	189	227	265	302	340	378
32	16	OUT	804	161	241	322	402	482	563	643	724	804
		IN	603	121	181	241	302	362	422	482	543	603
40	16	OUT	1257	251	377	503	629	754	880	1006	1131	1257
		IN	1056	211	317	422	528	634	739	845	950	1056
50	20	OUT	1963	393	589	785	982	1178	1374	1570	1767	1963
		IN	1649	330	495	660	825	990	1154	1319	1484	1649
63	20	OUT	3117	623	935	1247	1559	1870	2182	2494	2805	3117
		IN	2803	561	841	1121	1402	1682	1962	2242	2523	2803
80	25	OUT	5027	1005	1508	2011	2514	3016	3519	4022	4524	5027
		IN	4536	907	1361	1814	2268	2722	3175	3629	4082	4536
100	30	OUT	7854	1571	2356	3142	3927	4712	5498	6283	7069	7854
		IN	7147	1429	2144	2859	3574	4288	5003	5718	6432	7147

Note) Theoretical output (N) = Pressure (MPa) x Piston area (mm<sup>2</sup>)

1mm<sup>2</sup> = 0.0016in<sup>2</sup>

1MPa = 145 psi

**Weights**

**Slide bearing: MGPM12 to 100**

(kg)

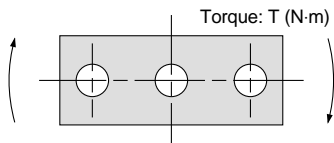
Bore size (mm)	Model	Standard stroke (mm)															
		10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
12	MGPM12	0.24	0.28	—	0.31	0.35	0.39	0.50	0.59	0.70	0.79	0.89	0.98	1.17	—	—	—
16	MGPM16	0.33	0.38	—	0.43	0.48	0.53	0.68	0.80	0.97	1.09	1.22	1.35	1.60	—	—	—
20	MGPM20	—	0.67	—	0.75	0.83	0.91	1.17	1.37	1.57	1.76	1.96	2.16	2.63	3.03	3.42	3.82
25	MGPM25	—	0.95	—	1.05	1.16	1.27	1.65	1.92	2.19	2.47	2.74	3.01	3.67	4.21	4.76	5.30
32	MGPM32	—	—	1.69	—	—	2.07	2.47	2.85	3.24	3.62	4.00	4.38	5.33	6.09	6.86	7.62
40	MGPM40	—	—	1.95	—	—	2.37	2.83	3.25	3.68	4.10	4.53	4.95	5.99	6.85	7.70	8.55
50	MGPM50	—	—	3.36	—	—	4.00	4.73	5.37	6.01	6.65	7.29	7.93	9.54	10.8	12.1	13.4
63	MGPM63	—	—	4.18	—	—	4.94	5.78	6.54	7.29	8.05	8.80	9.56	11.4	12.9	14.4	15.9
80	MGPM80	—	—	6.49	—	—	7.43	8.67	9.61	10.5	11.5	12.4	13.4	15.8	17.7	19.5	21.4
100	MGPM100	—	—	10.5	—	—	11.9	13.6	14.9	16.3	17.6	18.9	20.2	23.6	26.2	28.9	31.5

**Ball bushing: MGPL12 to 100**

(kg)

Bore size (mm)	Model	Standard stroke (mm)															
		10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
12	MGPL12	0.24	0.27	—	0.30	0.35	0.39	0.47	0.56	0.66	0.74	0.83	0.91	1.08	—	—	—
16	MGPL16	0.34	0.39	—	0.43	0.51	0.56	0.67	0.79	0.93	1.04	1.16	1.28	1.50	—	—	—
20	MGPL20	—	0.70	—	0.77	0.89	0.97	1.14	1.31	1.52	1.69	1.87	2.04	2.42	2.77	3.12	3.47
25	MGPL25	—	0.98	—	1.07	1.25	1.34	1.57	1.81	2.08	2.31	2.54	2.77	3.27	3.74	4.20	4.66
32	MGPL32	—	—	1.54	—	—	1.85	2.30	2.62	2.99	3.31	3.62	3.94	4.63	5.26	5.89	6.52
40	MGPL40	—	—	1.79	—	—	2.15	2.64	3.00	3.42	3.78	4.14	4.50	5.28	6.00	6.72	7.44
50	MGPL50	—	—	3.11	—	—	3.66	4.41	4.96	5.60	6.15	6.70	7.25	8.48	9.57	10.7	11.8
63	MGPL63	—	—	3.93	—	—	4.59	5.46	6.12	6.88	7.54	8.21	8.87	10.3	11.7	13.0	14.3
80	MGPL80	—	—	6.25	—	—	7.39	8.69	9.51	10.3	11.1	12.0	12.8	14.7	16.3	18.0	19.6
100	MGPL100	—	—	9.89	—	—	11.6	13.4	14.5	15.7	16.9	18.1	19.3	21.9	24.2	26.6	28.9

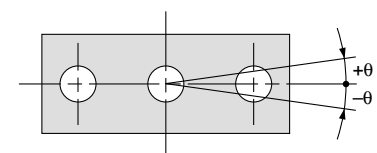
**Allowable Rotational Torque of Plate**



T (N-m)

Bore size (mm)	Bearing type	Stroke (mm)															
		10	20	25	30	40	50	75	100	125	150	175	200	250	300	350	400
12	MGPM	0.39	0.32	—	0.27	0.24	0.21	0.43	0.36	0.31	0.27	0.24	0.22	0.19	—	—	—
	MGPL	0.61	0.45	—	0.35	0.58	0.50	0.37	0.29	0.24	0.20	0.18	0.16	0.12	—	—	—
16	MGPM	0.69	0.58	—	0.49	0.43	0.38	0.69	0.58	0.50	0.44	0.40	0.36	0.30	—	—	—
	MGPL	0.99	0.74	—	0.59	0.99	0.86	0.65	0.52	0.43	0.37	0.32	0.28	0.23	—	—	—
20	MGPM	—	1.05	—	0.93	0.83	0.75	1.88	1.63	1.44	1.28	1.16	1.06	0.90	0.78	0.69	0.62
	MGPL	—	1.26	—	1.03	2.17	1.94	1.52	1.25	1.34	1.17	1.03	0.93	0.76	0.65	0.56	0.49
25	MGPM	—	1.76	—	1.55	1.38	1.25	2.96	2.57	2.26	2.02	1.83	1.67	1.42	1.24	1.09	0.98
	MGPL	—	2.11	—	1.75	3.37	3.02	2.38	1.97	2.05	1.78	1.58	1.41	1.16	0.98	0.85	0.74
32	MGPM	—	—	6.35	—	—	5.13	5.69	4.97	4.42	3.98	3.61	3.31	2.84	2.48	2.20	1.98
	MGPL	—	—	5.95	—	—	4.89	5.11	4.51	6.34	5.79	5.33	4.93	4.29	3.78	3.38	3.04
40	MGPM	—	—	7.00	—	—	5.66	6.27	5.48	4.87	4.38	3.98	3.65	3.13	2.74	2.43	2.19
	MGPL	—	—	6.55	—	—	5.39	5.62	4.96	6.98	6.38	5.87	5.43	4.72	4.16	3.71	3.35
50	MGPM	—	—	13.0	—	—	10.8	12.0	10.6	9.50	8.60	7.86	7.24	6.24	5.49	4.90	4.43
	MGPL	—	—	9.17	—	—	7.62	9.83	8.74	11.6	10.7	9.83	9.12	7.95	7.02	6.26	5.63
63	MGPM	—	—	14.7	—	—	12.1	13.5	11.9	10.7	9.69	8.86	8.16	7.04	6.19	5.52	4.99
	MGPL	—	—	10.2	—	—	8.48	11.0	9.74	13.0	11.9	11.0	10.2	8.84	7.80	6.94	6.24
80	MGPM	—	—	21.9	—	—	18.6	22.9	20.5	18.6	17.0	15.6	14.5	12.6	11.2	10.0	9.11
	MGPL	—	—	15.1	—	—	23.3	22.7	20.6	18.9	17.3	16.0	14.8	12.9	11.3	10.0	8.94
100	MGPM	—	—	38.8	—	—	33.5	37.5	33.8	30.9	28.4	26.2	24.4	21.4	19.1	17.2	15.7
	MGPL	—	—	27.1	—	—	30.6	37.9	34.6	31.8	29.3	27.2	25.3	22.1	19.5	17.3	15.5

**Non-rotating Accuracy of Plate**



For non-rotating accuracy  $\theta$  without load, use a value no more than the values in the table as a guide.

Bore size (mm)	Non-rotating accuracy $\theta$	
	MGPM	MGPL
12	$\pm 0.08^\circ$	$\pm 0.10^\circ$
16	$\pm 0.08^\circ$	$\pm 0.10^\circ$
20	$\pm 0.07^\circ$	$\pm 0.09^\circ$
25	$\pm 0.07^\circ$	$\pm 0.09^\circ$
32	$\pm 0.06^\circ$	$\pm 0.08^\circ$
40	$\pm 0.06^\circ$	$\pm 0.08^\circ$
50	$\pm 0.05^\circ$	$\pm 0.06^\circ$
63	$\pm 0.05^\circ$	$\pm 0.06^\circ$
80	$\pm 0.04^\circ$	$\pm 0.05^\circ$
100	$\pm 0.04^\circ$	$\pm 0.05^\circ$

Note: 1 N·m = 0.7375 ft·lb  
1 kg = 2.2046 lb

## Selecting Conditions

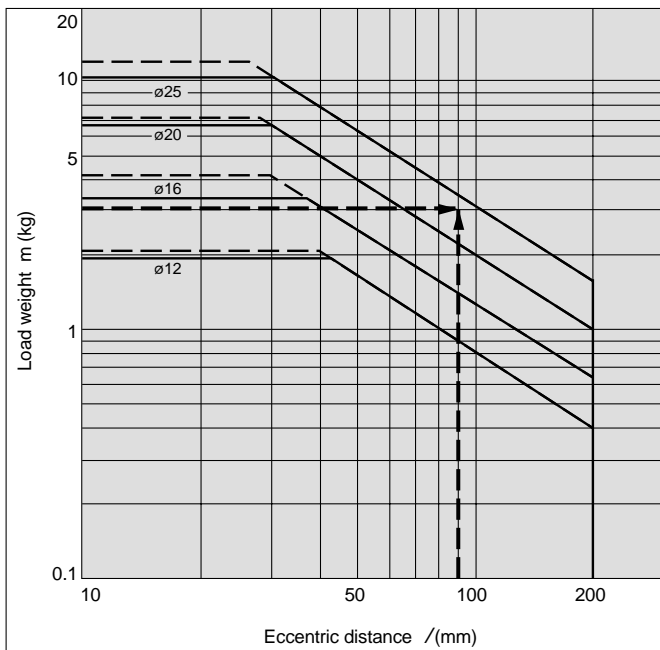
Mounting orientation	Vertical		Horizontal	
Maximum speed (mm/s)	200	400	200	400
Graph (Slide bearing)	<b>1, 2</b>	<b>3, 4</b>	<b>13, 14</b>	<b>15, 16</b>
Graph (Ball bushing)	<b>5 to 8</b>	<b>9 to 12</b>	<b>17, 18</b>	<b>19, 20</b>

### Selection Example 1 (Vertical Mounting)

**Selecting conditions**  
 Mounting: Vertical  
 Bearing type: Ball bushing  
 Stroke: 30mm  
 Maximum speed: 200mm/s  
 Load weight: 3kg  
 Eccentric distance: 90mm

Find the point of intersection for the load weight of 3kg and the eccentric distance of 90mm on graph **5**, based on vertical mounting, ball bushing, 30mm stroke, and the speed of 200mm/s.  
 →MGPL25-30 is selected.

#### **5** Less than 40mm stroke V = 200mm/s



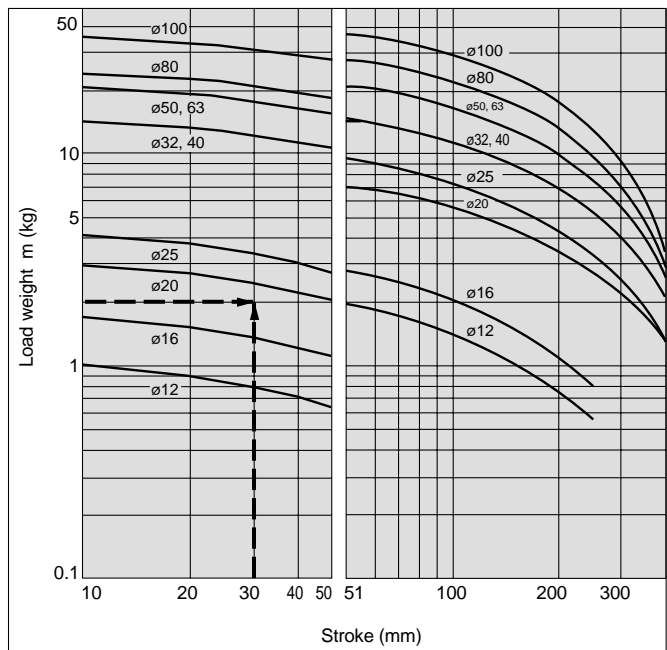
Note: 1 kg = 2.2046 lb  
 1 in = 25.4 mm

### Selection Example 2 (Horizontal Mounting)

**Selecting conditions**  
 Mounting: Horizontal  
 Bearing type: Slide bearing  
 Distance between plate and load center of gravity: 50mm  
 Maximum speed: 200mm/s  
 Load weight: 2kg  
 Stroke: 30mm

Find the point of intersection for the load weight of 2kg and stroke of 30mm on graph **13**, based on horizontal mounting, slide bearing, the distance of 50mm between the plate and load center of gravity, and the speed of 200mm/s.  
 →MGPM20-30 is selected.

#### **13** l = 50mm V = 200mm/s

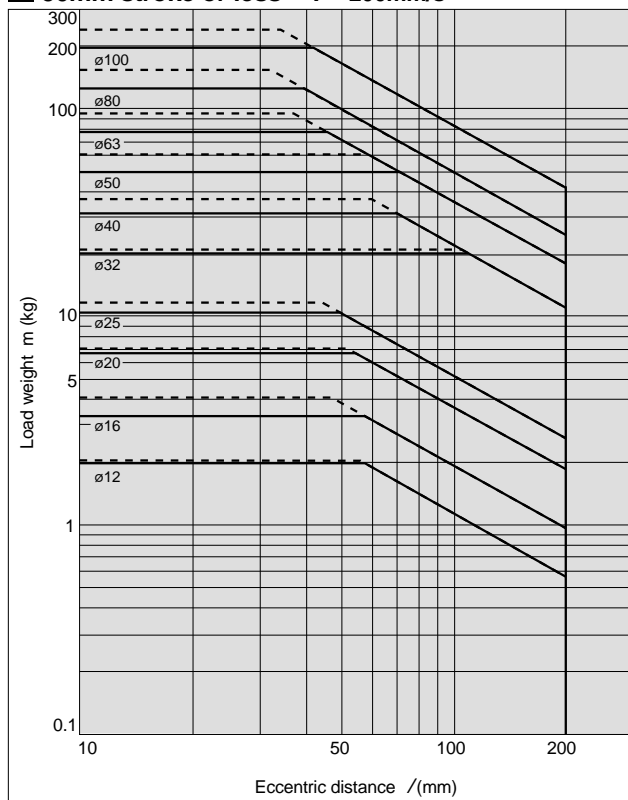


## Vertical Mounting **Slide Bearing**

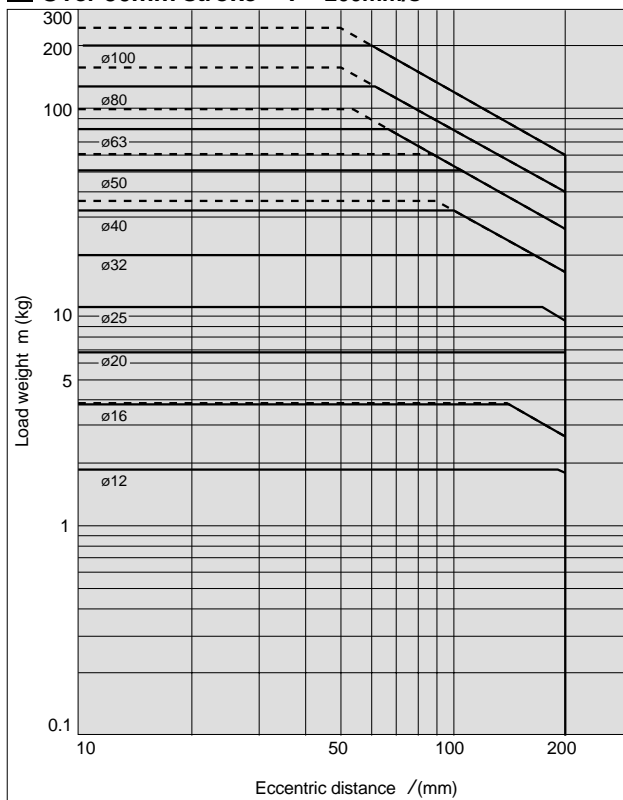
— Operating pressure: 0.4MPa (58 psi)  
 - - - Operating pressure: 0.5MPa (72 psi) or more

### MGPM12 to 100

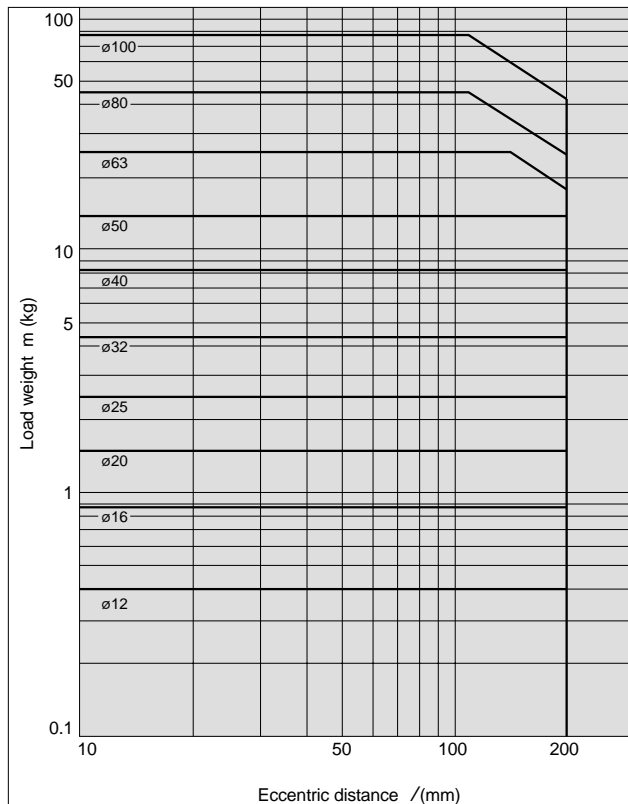
**1** 50mm stroke or less V = 200mm/s



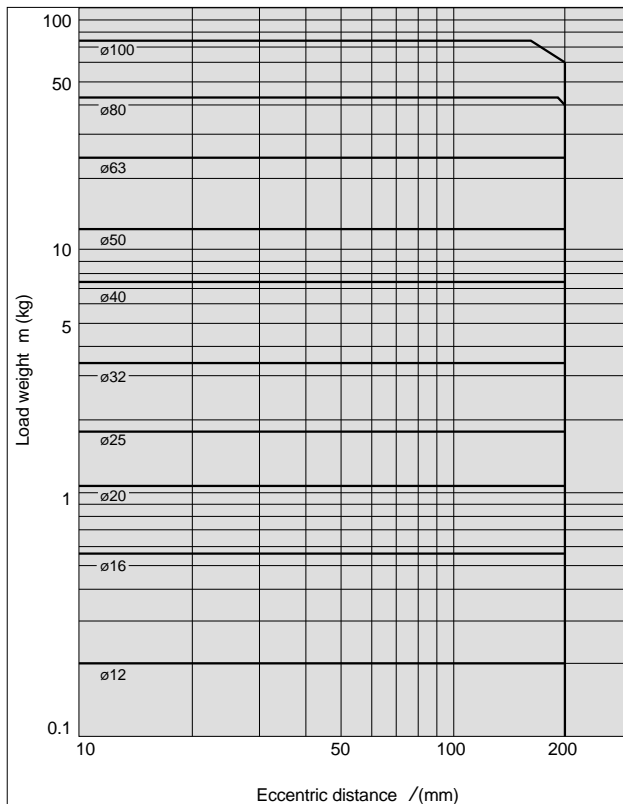
**2** Over 50mm stroke V = 200mm/s



**3** 50mm stroke or less V = 400mm/s



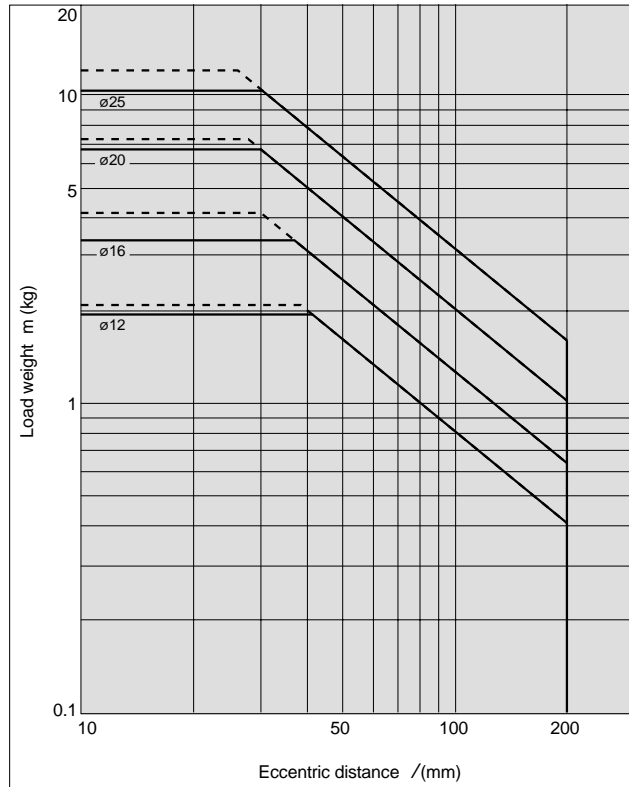
**4** Over 50mm stroke V = 400mm/s



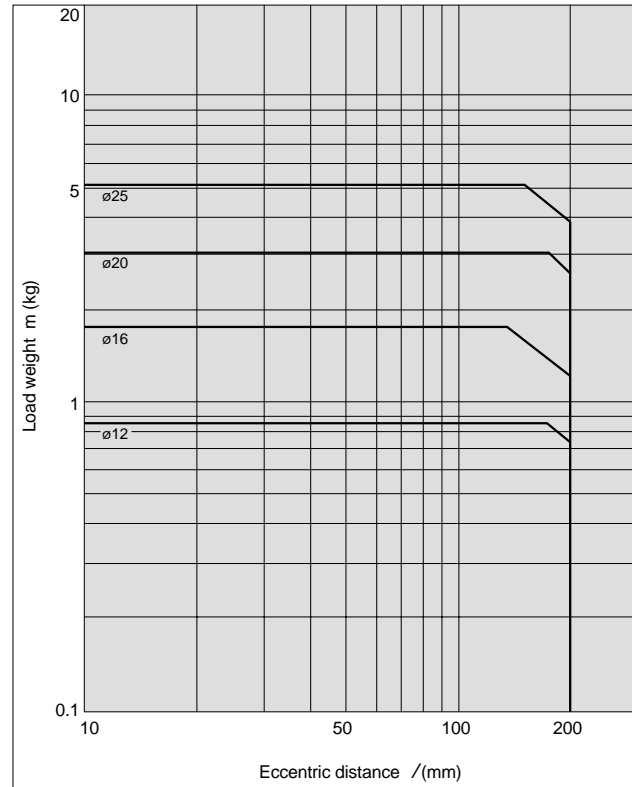
Note: 1 kg = 2.2046 lb  
 1 in = 25.4 mm

### MGPL12 to 25

#### 5 30mm stroke or less V = 200mm/s

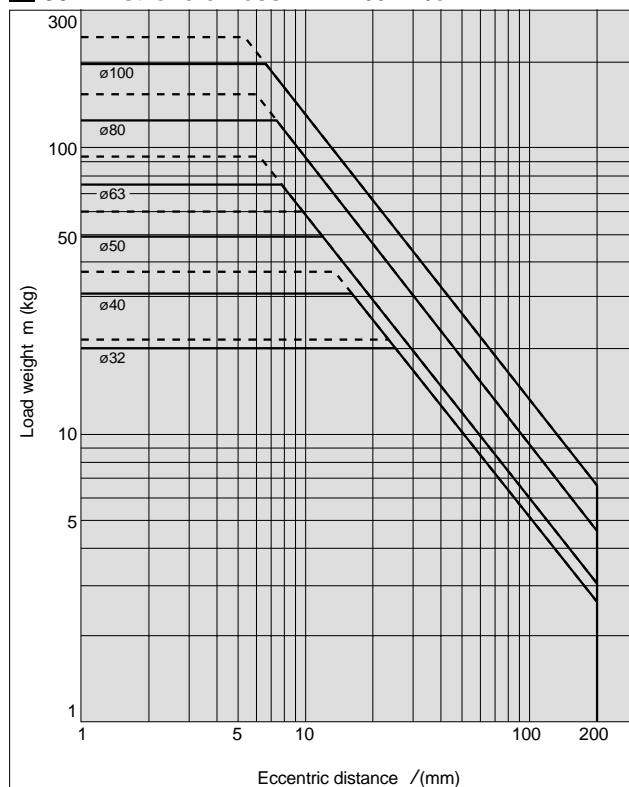


#### 6 Over 30mm stroke V = 200mm/s

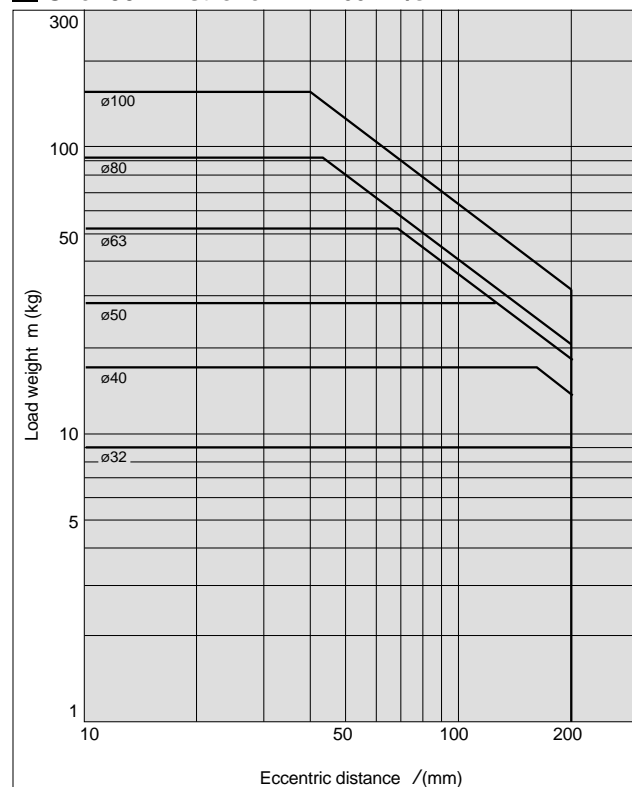


### MGPL32 to 100

#### 7 50mm stroke or less V = 200mm/s



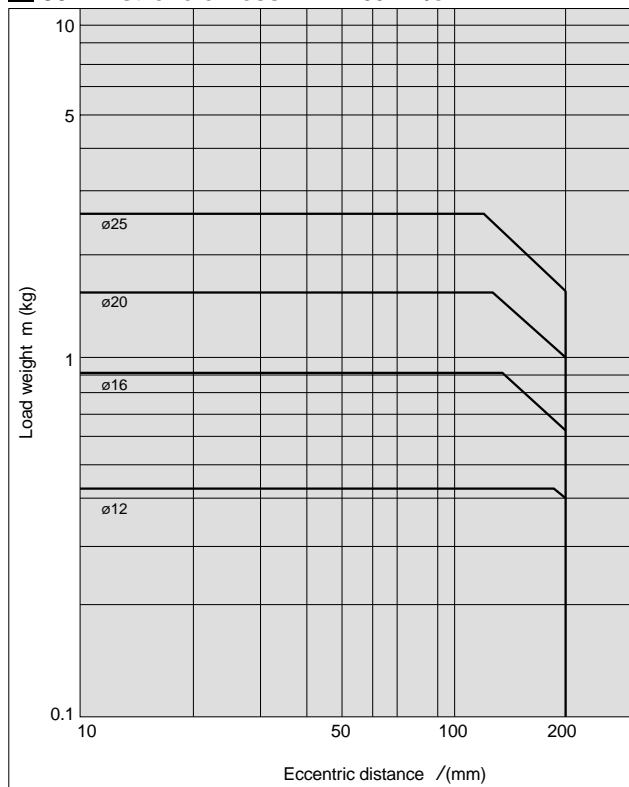
#### 8 Over 50mm stroke V = 200mm/s



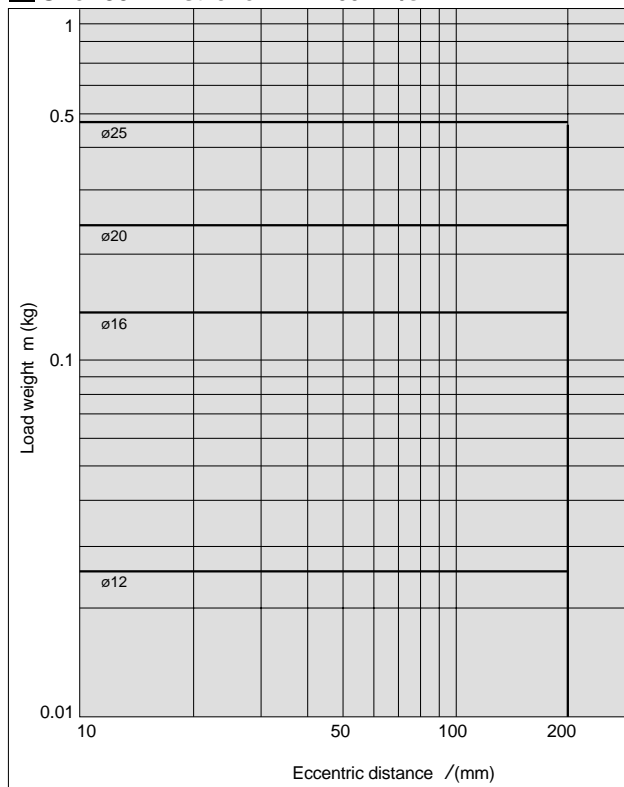
Note: 1 kg = 2.2046 lb  
 1 in = 25.4 mm

### MGPL12 to 25

**9** 30mm stroke or less V = 400mm/s

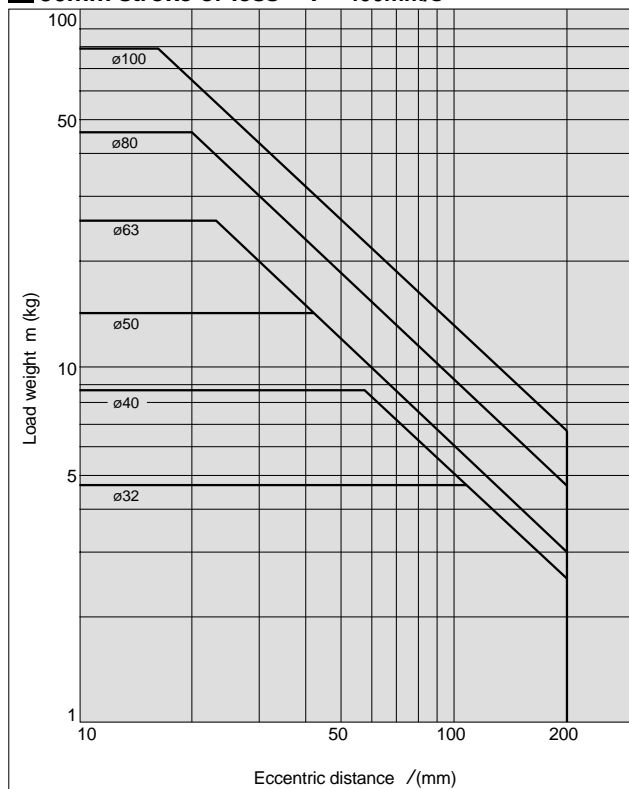


**10** Over 30mm stroke V = 400mm/s

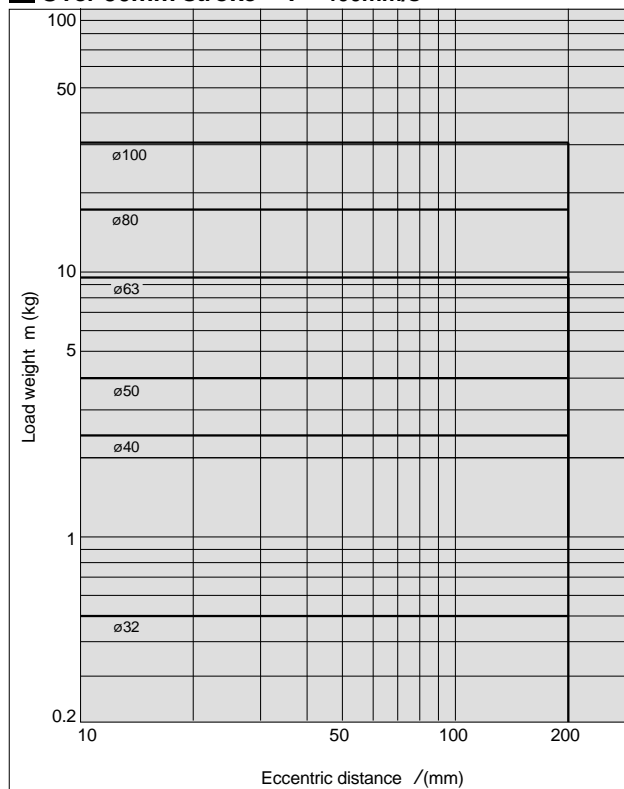


### MGPL32 to 100

**11** 50mm stroke or less V = 400mm/s



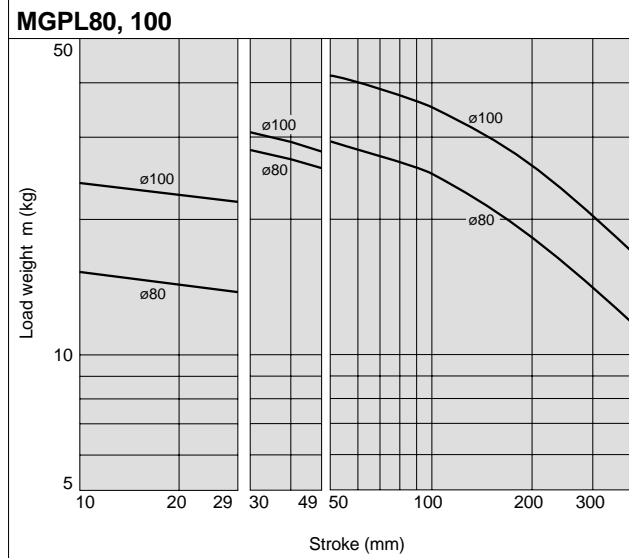
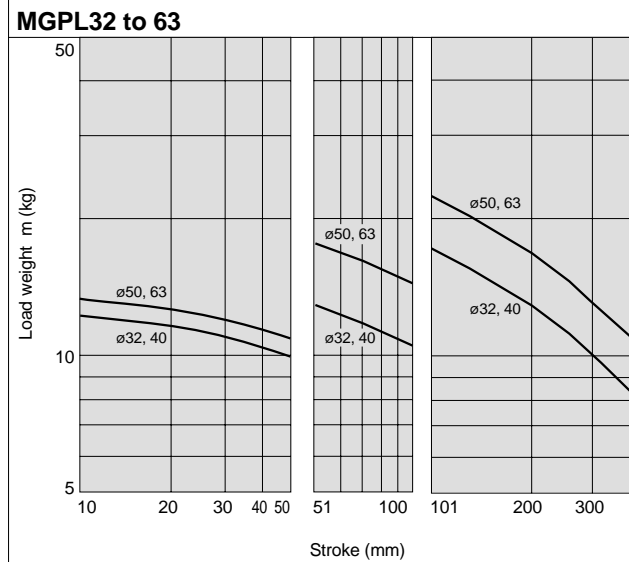
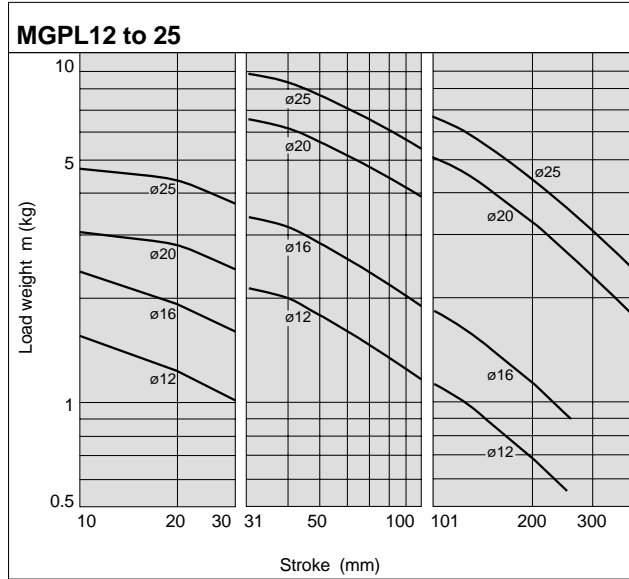
**12** Over 50mm stroke V = 400mm/s



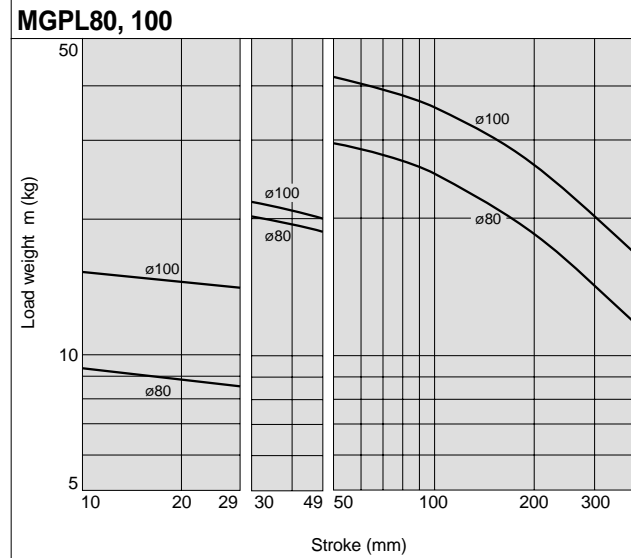
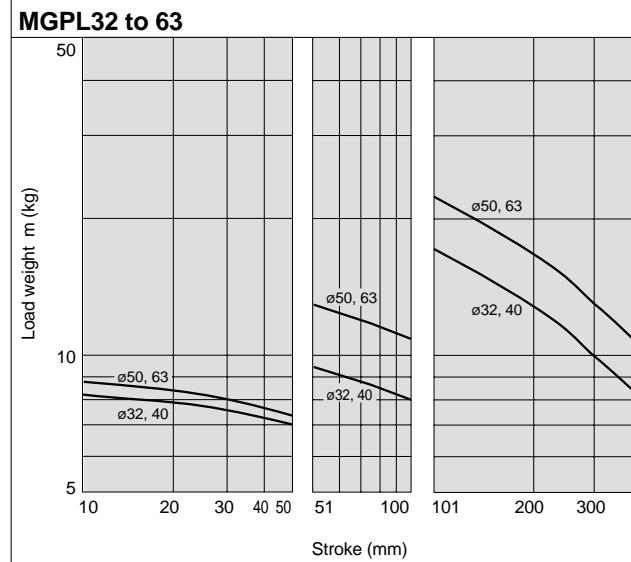
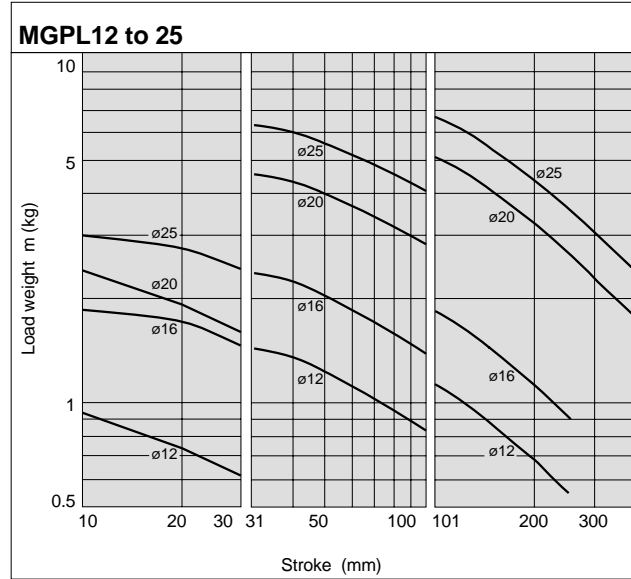
Note: 1 kg = 2.2046 lb  
1 in = 25.4 mm

## Horizontal Mounting **Ball Bushing**

**17**  $\varnothing = 50\text{mm}$   $V = 200\text{m/s}$



**18**  $\varnothing = 100\text{mm}$   $V = 200\text{m/s}$

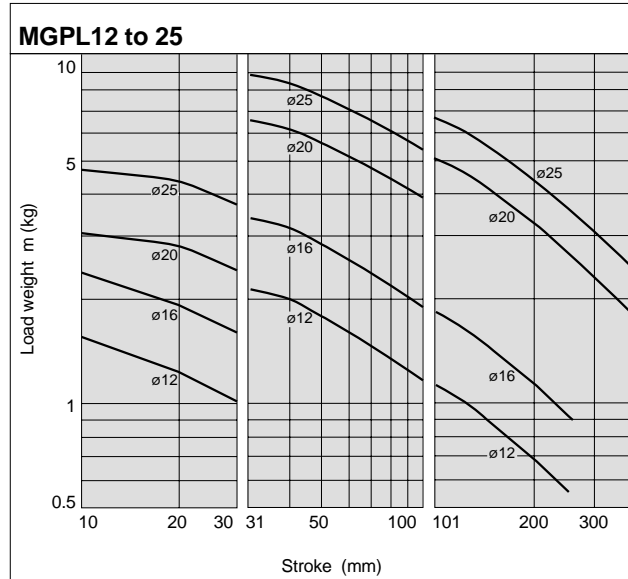


Note: 1 kg = 2.2046 lb  
1 in = 25.4 mm

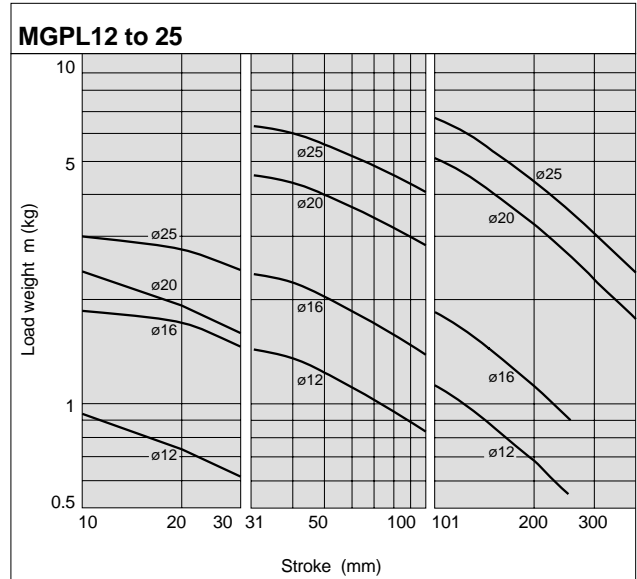


Horizontal Mounting **Ball Bushing**

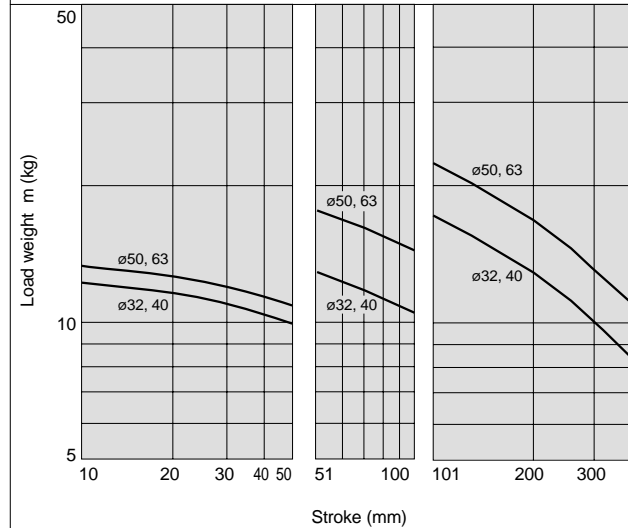
**17**  $\varnothing = 50\text{mm}$   $V = 200\text{m/s}$



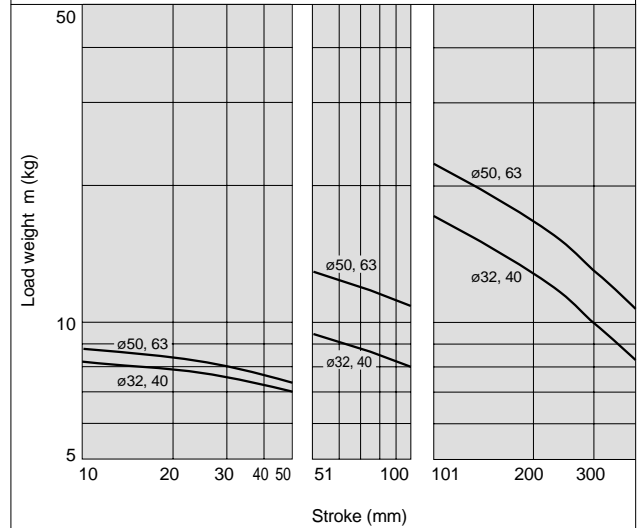
**18**  $\varnothing = 100\text{mm}$   $V = 200\text{m/s}$



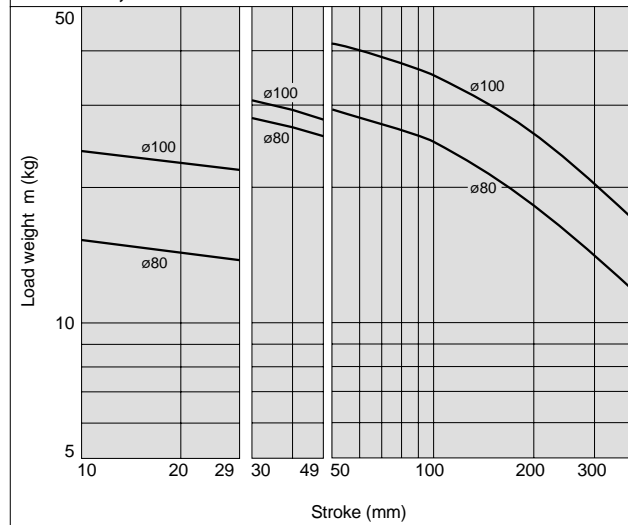
**MGPL32 to 63**



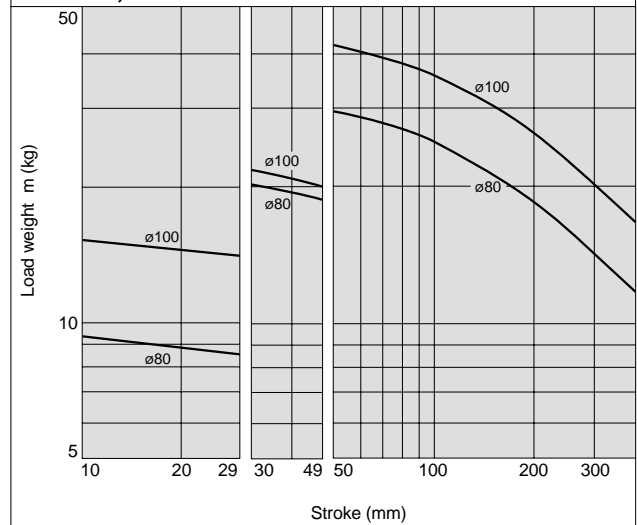
**MGPL32 to 63**



**MGPL80, 100**



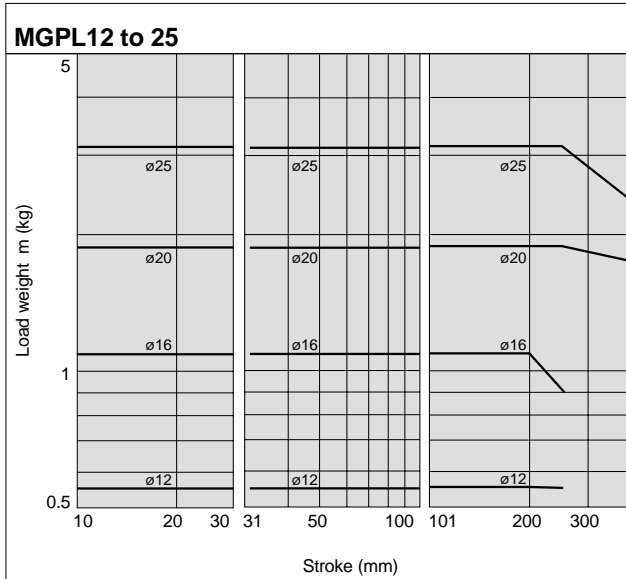
**MGPL80, 100**



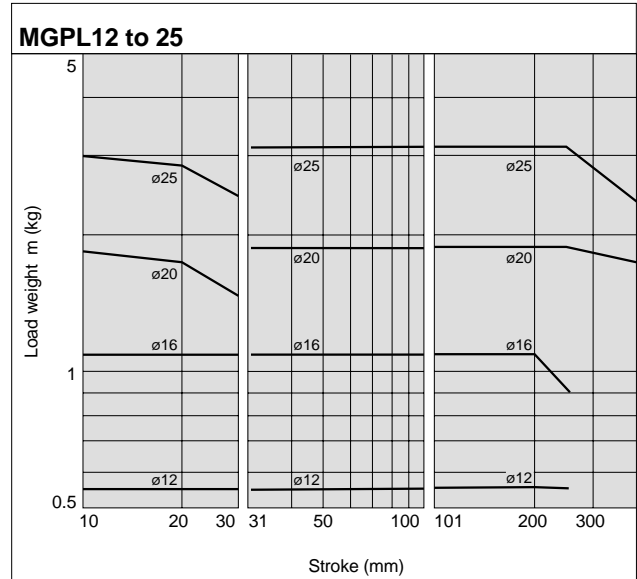
Note: 1 kg = 2.2046 lb  
1 in = 25.4 mm

## Horizontal Mounting **Ball Bushing**

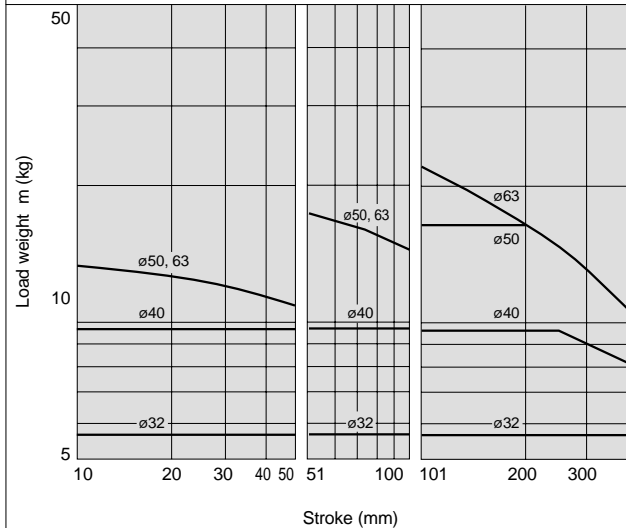
**19** / = 50mm V = 400m/s



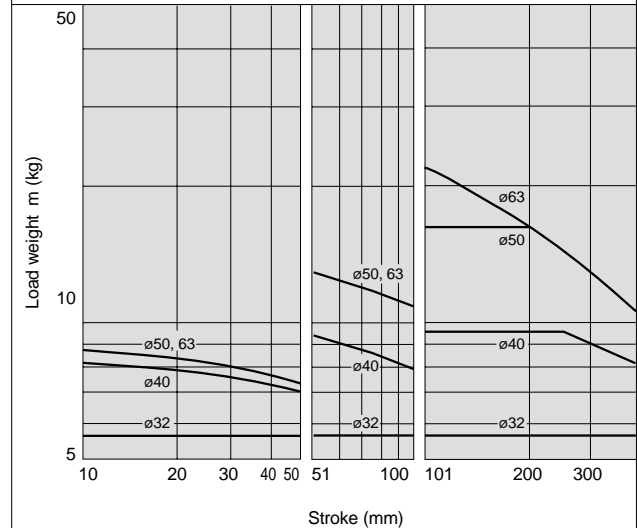
**20** / = 100mm V = 400m/s



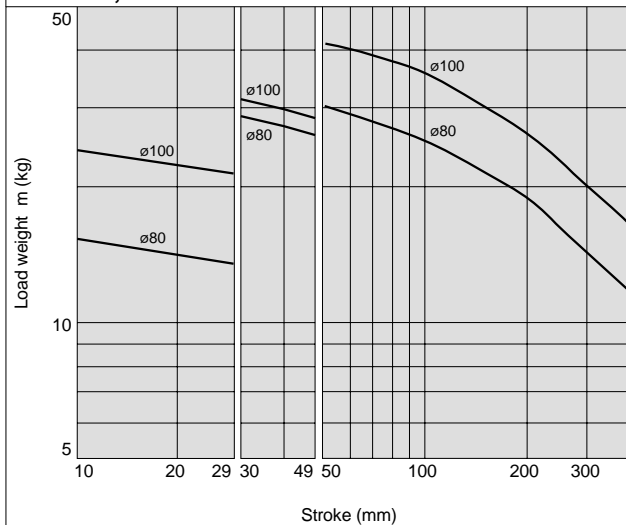
**MGPL32 to 63**



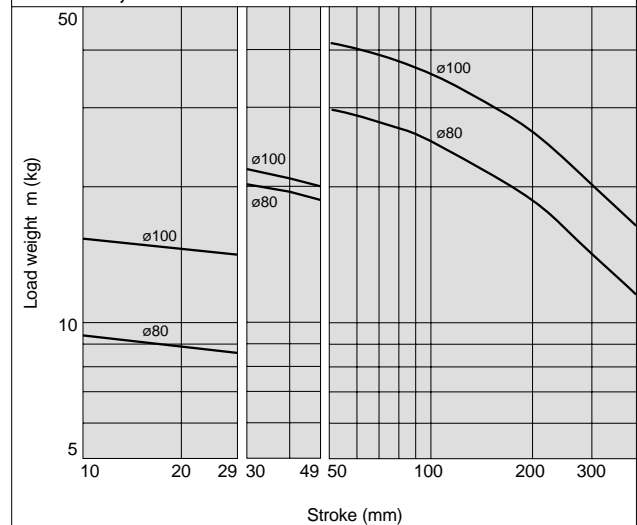
**MGPL32 to 63**



**MGPL80, 100**



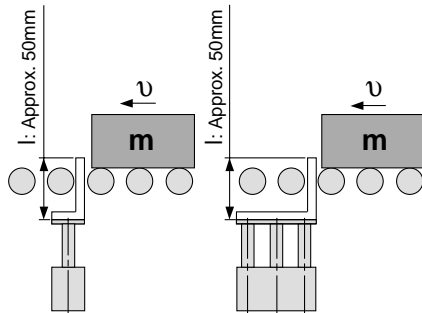
**MGPL80, 100**



Note: 1 kg = 2.2046 lb  
1 in = 25.4 mm

## Operating Range when Used as Stopper

### Bore Sizes $\phi 12$ to 25/MGPM12 to 25 (Slide bearing)



\* When selecting a model with a longer  $l$  dimension, be sure to choose a bore size which is sufficiently large.

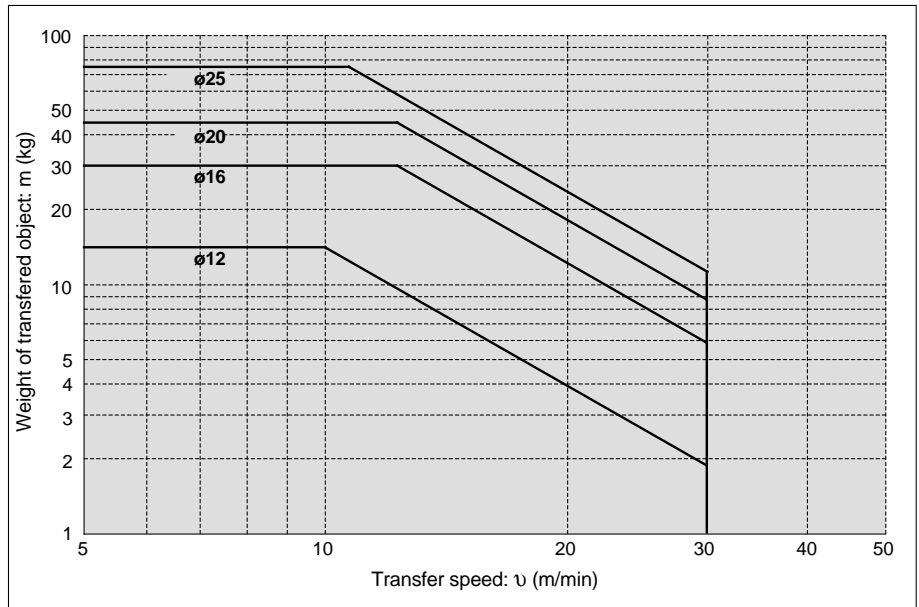
#### ⚠ Caution

##### Handling precautions

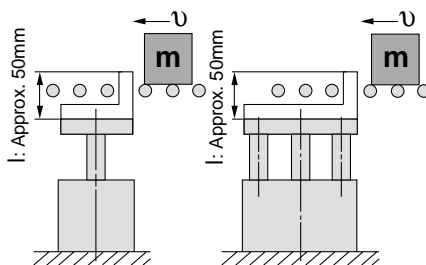
Note 1) When using as a stopper, select a model with a stroke of 30mm or less.

Note 2) Model MGPL (ball bushing) cannot be used as a stopper.

#### MGPM12 to 25 (Slide bearing)



### Bore Sizes $\phi 32$ to 100/MGPM32 to 100 (Slide bearing)



\* When selecting a model with a longer  $l$  dimension, be sure to choose a bore size which is sufficiently large.

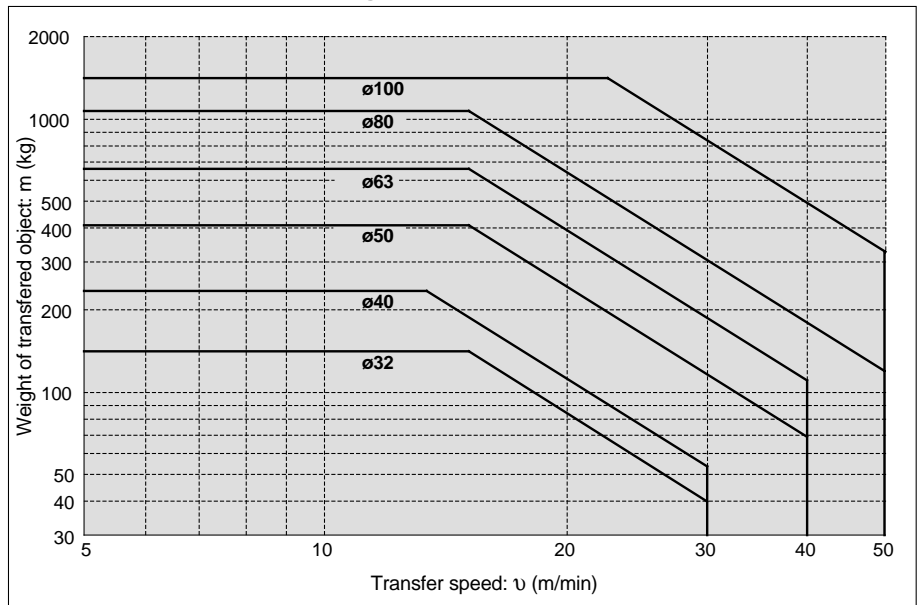
#### ⚠ Caution

##### Handling precautions

Note 1) When using as a stopper, select a model with a stroke of 50mm or less.

Note 2) Model MGPL (ball bushing) cannot be used as a stopper.

#### MGPM32 to 100 (Slide bearing)



Note: 1m = 3.28 ft  
1 kg = 2.2046 lb

# Series MGP

# Compact Guide Cylinder

## 1. Water Resistant

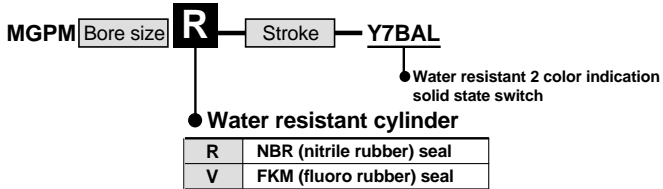
Ideal for use in a machine tool environment exposed to coolants. Also applicable for use in an environment with water splashing such as food processing and car wash equipment, etc.

### Specifications

Applicable series		MGPM
Bearing type		Slide bearing
Bore size (mm)		20, 25, 32, 40, 50, 63, 80, 100
Cushion	MGPM R	Rubber cushion
	MGPM V	Without cushion

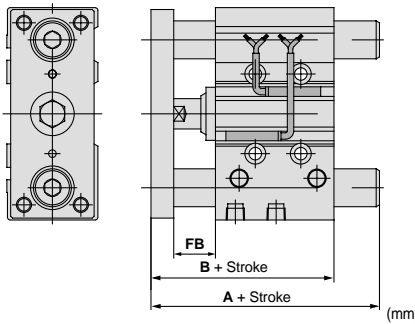
\* Specifications other than above are identical to the standard basic type.

### How to Order



\* Stainless steel parts are available as special order products.

### Dimensions (mm)



1 in = 25.4 mm

Bore size (mm)	A		B	FB
	50mm stroke or less	51mm stroke or more		
20	66	97.5	66	19
25	67.5	99	67.5	20
32	109	114	71.5	22
40	109	114	78	22
50	117.5	129	83	23
63	117.5	129	88	23
80	121	148	102.5	24
100	141	166	120	29

\* Other dimensions are identical to the standard type.

## 2. Copper-free Series (applicable to CRT manufacturing process)

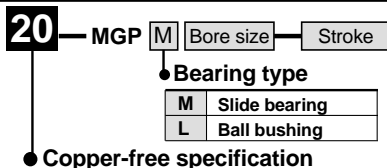
To prevent the influence of copper ions or halogen ions during CRT manufacturing processes, copper and fluorine materials are not used as component parts.

### Specifications

Applicable series	MGPM	MGPL
Bearing type	Slide bearing	Ball bushing
Bore size (mm)	12, 16, 20, 25, 32 40, 50, 63, 80, 100	

\* Specifications and dimensions other than above are identical to the standard basic type.

### How to Order



## 3. Clean Room Series

Applicable in a clean room environment.

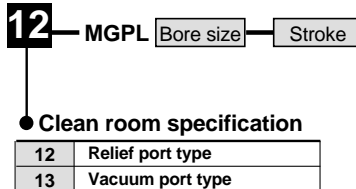
Ideal for use in conveyor lines for semi-conductor (LSI), liquid crystal (LCD), food processing, pharmaceutical, and electronic parts, etc.

### Specifications

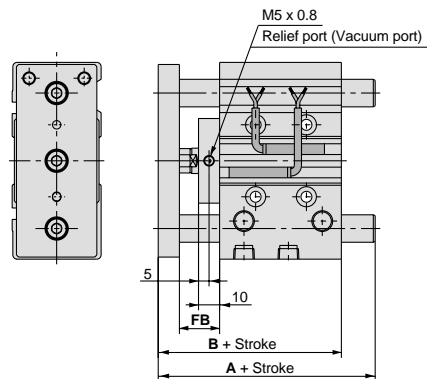
Applicable series	MGPL							
Bearing type	Ball bushing							
Bore size (mm)	12	16	20	25	32	40	50	63
Stroke (mm)	10 to 100		20 to 200			25 to 200		

\* Specifications other than above are identical to the standard basic type.

### How to Order



### Dimensions (mm)



1 in = 25.4 mm

Bore size (mm)	A			B	FB
	30mm stroke or less	Over 30mm to 100mm stroke	Over 100mm stroke		
12	56	68	—	55	18
16	62	78	—	59	18
20	76	93	117	66	19
25	82.5	98.5	117.5	66.5	19

(mm)

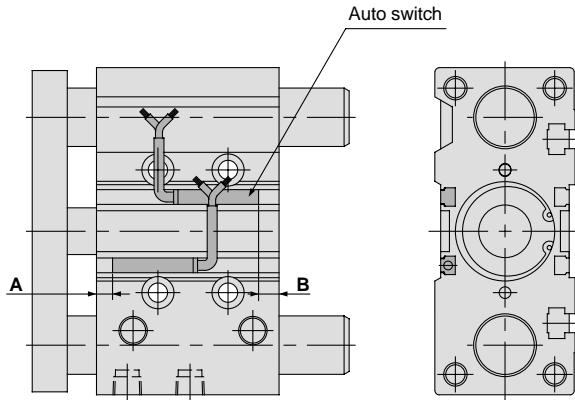
Bore size (mm)	A			B	FB
	50mm stroke or less	Over 50mm to 100mm stroke	Over 100mm stroke		
32	93	110	130	71.5	22
40	93	110	130	78	22
50	104	125	145	83	23
63	104	125	145	88	23

(mm)

\* Other dimensions are identical to the standard type.

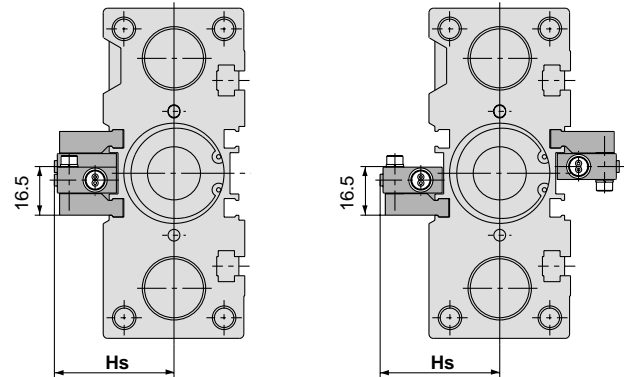
Auto Switches Dimensions (mm)/Proper Mounting Position for Stroke End Detection

1 in = 25.4 mm



For D-P5DW (\* Cannot be mounted on bore sizes ø32 or less.)

ø40 to ø63



For 25mm stroke

\* For bore sizes ø40 through 63 with two switches, one switch is mounted on each side.

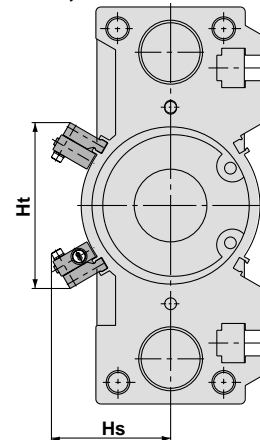
Proper mounting position (mm)

Bore size (mm)	A	B	Bore size (mm)	A	B
12	1.5	3	40	9.5	9.5
16	4.5	4	50	7.5	11.5
20	4	8	63	10	14
25	4.5	8	80	13	18.5
32	5.5	7	100	17.5	23.5

Note 1) Minimum mountable strokes for auto switch are 10mm or more for two switches, and 5mm or more for one switch.

Note 2) Type D-P5DW can be mounted only on bore sizes ø40 through ø100.

ø80, ø100



Bore size (mm)	Hs	Ht
40	44.5	—
50	50	—
63	57	—
80	60.7	84.4
100	70.8	96.1

\* Minimum mountable strokes for auto switch are 10mm or more for two switches, and 5mm or more for one switch.

Auto Switch Mounting

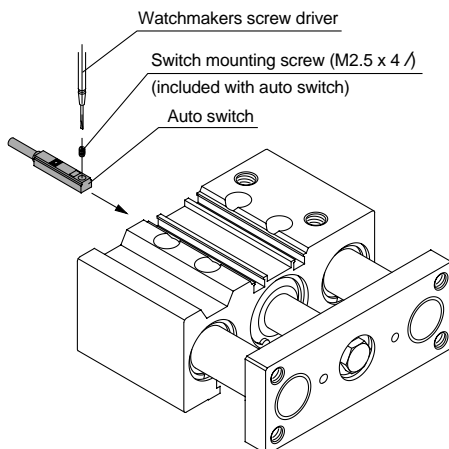
**Caution**

Auto switch mounting tool

- When tightening the auto switch mounting screw (included with auto switch), use a watchmakers screw driver with a handle about 5 to 6mm in diameter.

Tightening torque

- Tighten with a torque of 0.05 to 0.1N·m. As a rule, it should be turned about 90° past the point at which tightening can be felt.



For D-P5DW

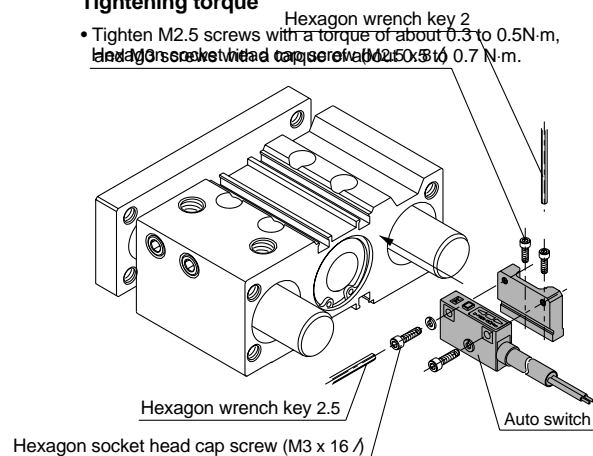
**Caution**

Auto switch mounting tool

- When tightening hexagon socket head cap screws of the auto switch, use hexagon wrench key 2 or 2.5 with the appropriate screws.

Tightening torque

- Tighten M2.5 screws with a torque of about 0.3 to 0.5N·m, and M3 screws with a torque of about 0.5 to 0.7 N·m.



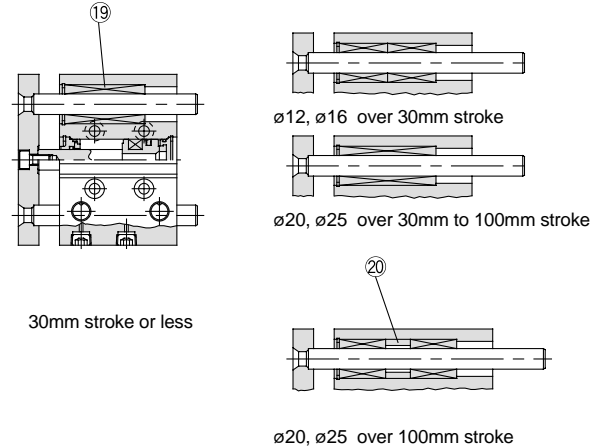
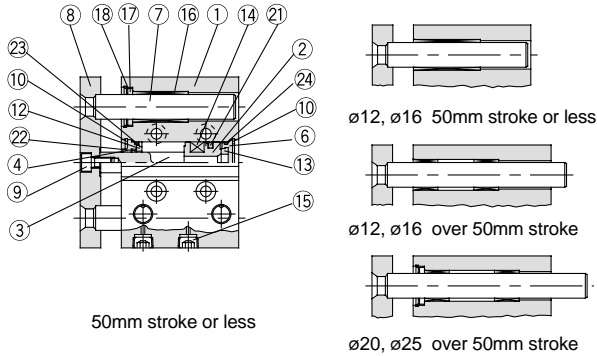
## Construction

### Series MGPM

### Series MGPL

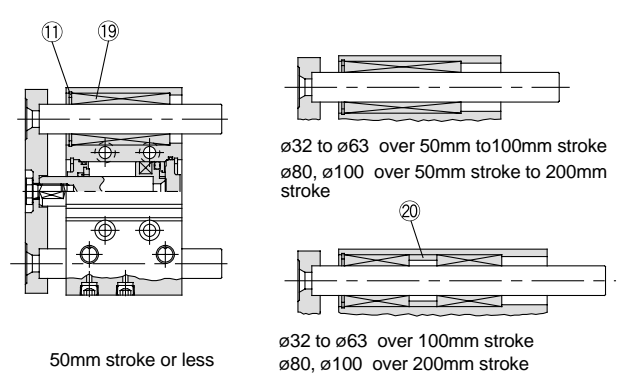
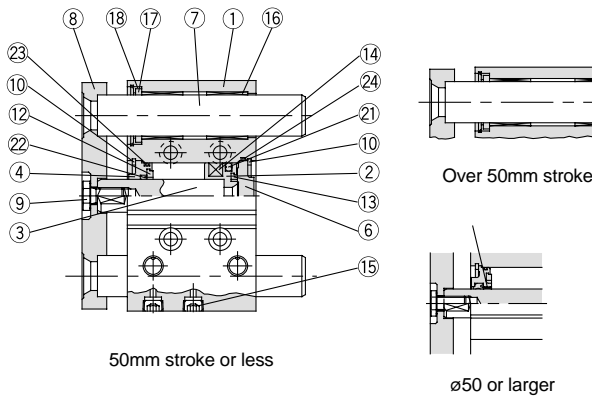
#### MGPM12 to 25

#### MGPL12 to 25



#### MGPM32 to 100

#### MGPL32 to 100



#### Parts list

No.	Description	Material	Note
1	Body	Aluminum alloy	Hard anodized
2	Piston	Aluminum alloy	Chromated
3	Piston rod	Stainless steel	ø12 to ø25
		Carbon steel	ø32 to ø100 Hard chrome plated
4	Collar	Aluminum bearing alloy	ø12 to ø40 Clear anodized
		Aluminum alloy casting	ø50 to ø100 Coated
5	Bushing	Lead bronze casting	ø50 to ø100
6	Head cover	Aluminum alloy	ø12 to ø63 Clear chromated
			ø80 to ø100 Coated
7	Guide rod	Carbon steel	Hard chrome plated
8	Plate	Carbon steel	Nickel plated
9	Plate mounting bolt	Carbon steel	Nickel plated
10	Snap ring	Carbon tool steel	Phosphate coated
11	Snap ring	Carbon tool steel	Phosphate coated

#### Parts list

No.	Description	Material	Note
12	Bumper A	Urethane	
13	Bumper B	Urethane	
14	Magnet	Synthetic rubber	
15	Plug (M-5P)	Brass	ø12, ø16 Nickel plated
16	Hexagon socket head taper plug	Carbon steel	ø20 to ø100 Nickel plated
17	Slide bearing	Lead bronze casting	
18	Felt	Felt	
19	Holder	Resin	
20	Ball bushing		
21	Spacer	Aluminum alloy	
21*	Piston seal	NBR	
22*	Rod seal	NBR	
23*	Gasket A	NBR	
24*	Gasket B	NBR	

#### Replacement parts: Seal kits

Bore size (mm)	Order No.	Contents
12	MGP12-PS	Kits include items 21, 22, 23, and 24 from the table above.
16	MGP16-PS	
20	MGP20-PS	
25	MGP25-PS	
32	MGP32-PS	

#### Replacement parts: Seal kits

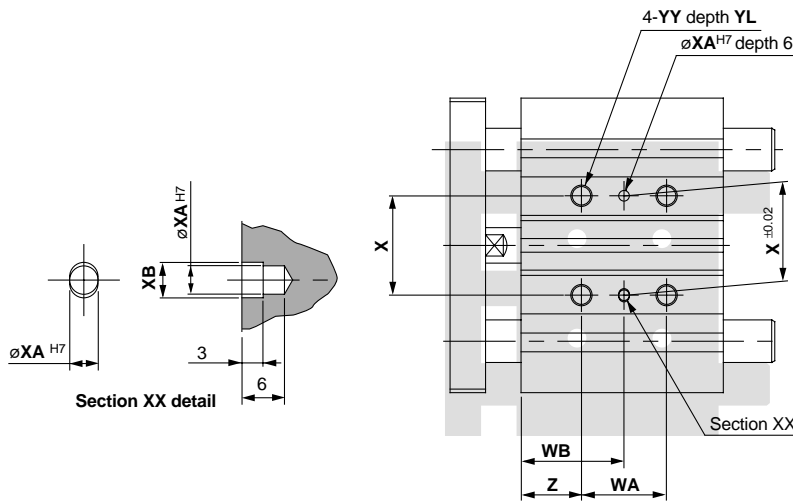
Bore size (mm)	Order no.	Contents
40	MGP40-PS	Kits include items 21, 22, 23, and 24 from the table above.
50	MGP50-PS	
63	MGP63-PS	
80	MGP80-PS	
100	MGP100-PS	

\* Seal kits are sets consisting of items 21 through 24 above, and can be ordered using the order number for each bore size.

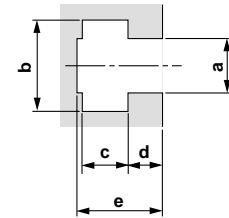
# Compact Guide Cylinder

ø12 to ø25/MGPM, MGPL Dimensions (mm)

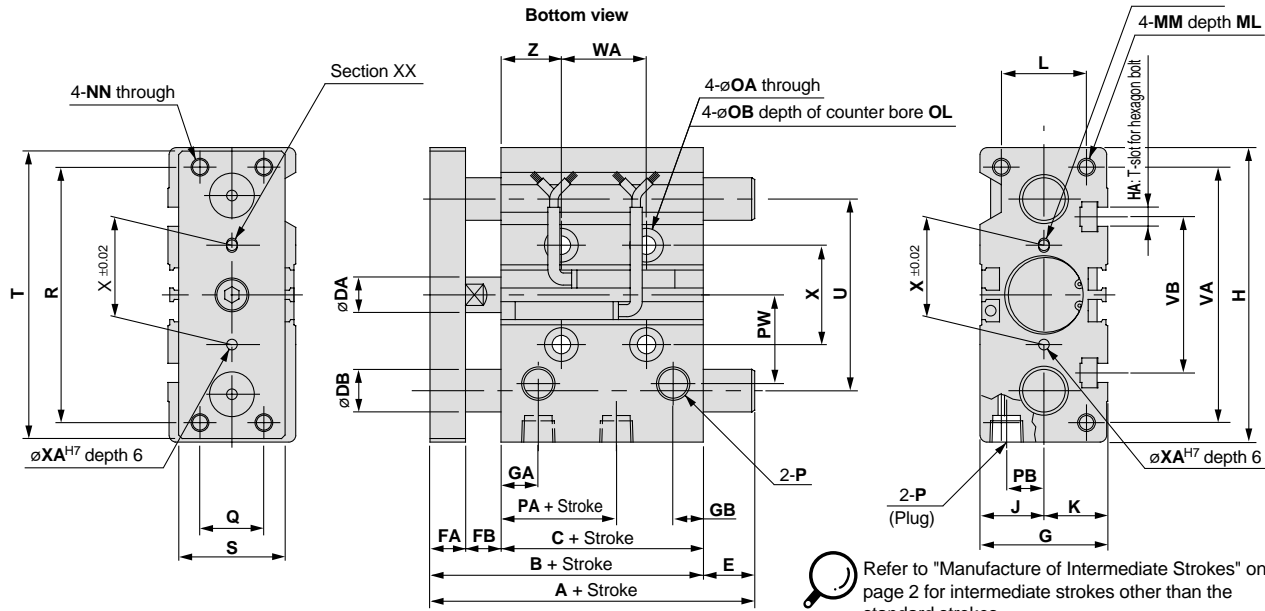
# Series MGP



T-slot dimensions 1 in = 25.4 mm



Bore size (mm)	a	b	c	d	e
12	4.4	7.4	3.7	2	6.2
16	4.4	7.4	3.7	2.5	6.7
20	5.4	8.4	4.5	2.8	7.8
25	5.4	8.4	4.5	3	8.2



Refer to "Manufacture of Intermediate Strokes" on page 2 for intermediate strokes other than the standard strokes.

## MGPM, MGPL Common dimensions

(mm)

Bore size (mm)	Standard stroke (mm)	B	C	DA	FA	FB	G	GA	GB	H	HA	J	K	L	MM	ML	NN	OA	OB	OL	P	PA	PB	PW
12	10, 20, 30, 40, 50, 75, 100	42	29	6	8	5	26	11	7.5	58	M4	13	13	18	M4 x 0.7	10	M4 x 0.7	4.3	8	4.5	M5 x 0.8	13	8	18
16	125, 150, 175, 200, 250	46	33	8	8	5	30	11	8	64	M4	15	15	22	M5 x 0.8	12	M5 x 0.8	4.3	8	4.5	M5 x 0.8	15	10	19
20	20, 30, 40, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	53	37	10	10	6	36	10.5	8.5	83	M5	18	18	24	M5 x 0.8	13	M5 x 0.8	5.6	9.5	5.5	Rc 1/8	12.5	10.5	25
25		53.5	37.5	12	10	6	42	11.5	9	93	M5	21	21	30	M6 x 1.0	15	M6 x 1.0	5.6	9.5	5.5	Rc 1/8	12.5	13.5	28.5

Bore size (mm)	Q	R	S	T	U	VA	VB	WA					WB					X	XA	XB	YY	YL	Z
								30st or less	Over 30st to 100st	Over 100st to 200st	Over 200st to 300st	Over 300st	30st or less	Over 30st to 100st	Over 100st to 200st	Over 200st to 300st	Over 300st						
12	14	48	22	56	41	50	37	20	40	110	200	—	15	25	60	105	—	23	3	3.5	M5 x 0.8	10	5
16	16	54	25	62	46	56	38	24	44	110	200	—	17	27	60	105	—	24	3	3.5	M5 x 0.8	10	5
20	18	70	30	81	54	72	44	24	44	120	200	300	29	39	77	117	167	28	3	3.5	M6 x 1.0	12	17
25	26	78	38	91	64	82	50	24	44	120	200	300	29	39	77	117	167	34	4	4.5	M6 x 1.0	12	17

## MGPM (slide bearing)/Dimensions A, DB, E (mm)

Bore size (mm)	A			DB	E		
	50st or less	Over 50st to 100st	Over 100st		50st or less	Over 50st to 100st	Over 100st
12	42	60.5	85	8	0	18.5	43
16	46	64.5	95	10	0	18.5	49

## MGPL (ball bushing)/Dimensions A, DB, E (mm)

Bore size (mm)	A			DB	E		
	30st or less	Over 30st to 100st	Over 100st		30st or less	Over 30st to 100st	Over 100st
12	43	55	85	6	1	13	43
16	49	65	95	8	3	19	49

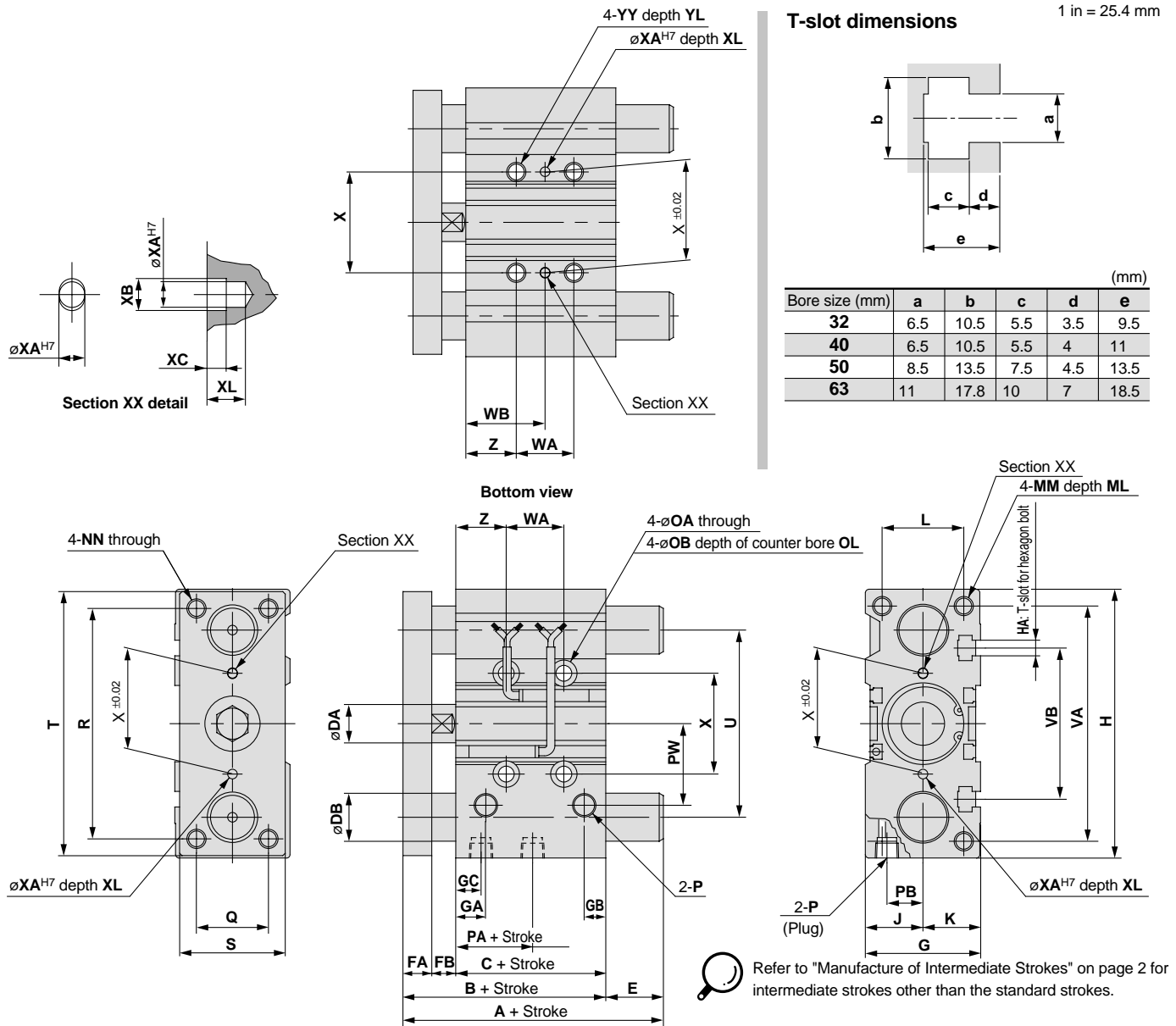
## MGPM (slide bearing)/Dimensions A, DB, E (mm)

Bore size (mm)	A			DB	E		
	50st or less	Over 50st to 200st	Over 200st		50st or less	Over 50st to 200st	Over 200st
20	53	84.5	122	12	0	31.5	69
25	53.5	85	122	16	0	31.5	68.5

## MGPL (ball bushing)/Dimensions A, DB, E (mm)

Bore size (mm)	A			DB	E		
	30st or less	Over 30st to 100st	Over 100st to 200st		30st or less	Over 30st to 100st	Over 100st to 200st
20	63	80	104	12	10	27	51
25	69.5	85.5	104.5	13	16	32	51

## ø32 to ø63/MGPM, MGPL Dimensions (mm)



### MGPM, MGPL Common dimensions (mm)

Bore size (mm)	Standard stroke (mm)	B	C	DA	FA	FB	G	GA	GB	GC	H	HA	J	K	L	MM	ML	NN	OA	OB	OL	P	PA	PB	PW	Q
32	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400	59.5	37.5	16	12	10	48	12.5	9	12.5	112	M6	24	24	34	M8 x 1.25	20	M8 x 1.25	6.6	11	7.5	Rc 1/8	7	15	34	30
40		66	44	16	12	10	54	14	10	14	120	M6	27	27	40	M8 x 1.25	20	M8 x 1.25	6.6	11	7.5	Rc 1/8	13	18	38	30
50		72	44	20	16	12	64	14	11	12	148	M8	32	32	46	M10 x 1.5	22	M10 x 1.5	8.6	14	9	Rc 1/4	9	21.5	47	40
63		77	49	20	16	12	78	16.5	13.5	16.5	162	M10	39	39	58	M10 x 1.5	22	M10 x 1.5	8.6	14	9	Rc 1/4	14	28	55	50

Bore size (mm)	R	S	T	U	VA	VB	WA					WB					X	XA	XB	XC	XL	YY	YL	Z
							25st or less	Over 25st to 100st	Over 100st to 200st	Over 200st to 300st	Over 300st	25st or less	Over 25st to 100st	Over 100st to 200st	Over 200st to 300st	Over 300st								
32	96	44	110	78	98	63	24	48	124	200	300	33	45	83	121	171	42	4	4.5	3	6	M8 x 1.25	16	21
40	104	44	118	86	106	72	24	48	124	200	300	34	46	84	122	172	50	4	4.5	3	6	M8 x 1.25	16	22
50	130	60	146	110	130	92	24	48	124	200	300	36	48	86	124	174	66	5	6	4	8	M10 x 1.5	20	24
63	130	70	158	124	142	110	28	52	128	200	300	38	50	88	124	174	80	5	6	4	8	M10 x 1.5	20	24

### MGPM (slide bearing)/Dimensions A, DB, E (mm)

Bore size (mm)	A			DB	E		
	50st or less	Over 50st to 200st	Over 200st		50st or less	Over 50st to 200st	Over 200st
32	97	102	140	20	37.5	42.5	80.5
40	97	102	140	20	31	36	74
50	106.5	118	161	25	34.5	46	89
63	106.5	118	161	25	29.5	41	84

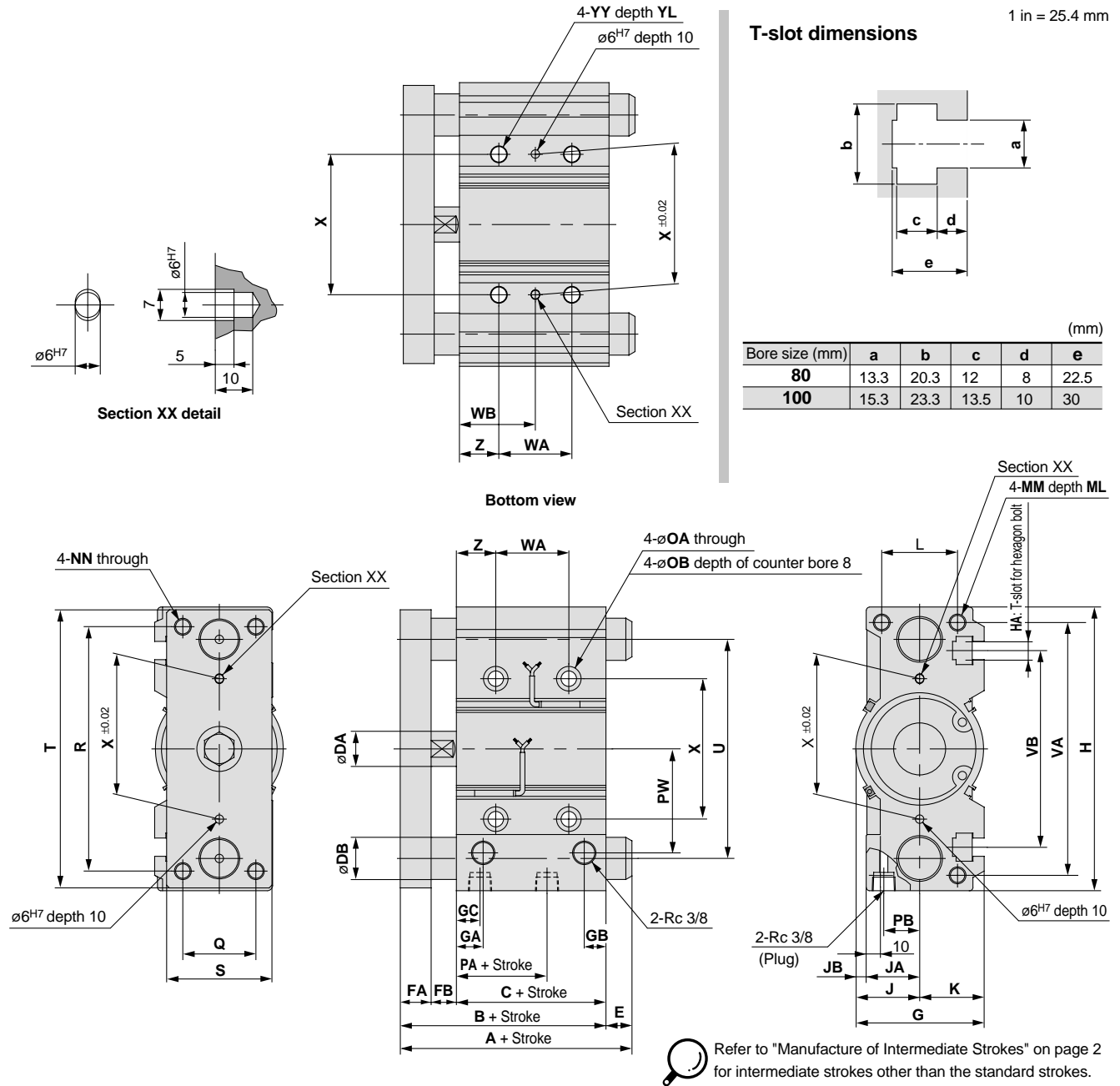
### MGPL (ball bushing)/Dimensions A, DB, E (mm)

Bore size (mm)	A				DB	E			
	50st or less	Over 50st to 100st	Over 100st to 200st	Over 200st		50st or less	Over 50st to 100st	Over 100st to 200st	Over 200st
32	81	98	118	140	16	21.5	38.5	58.5	80.5
40	81	98	118	140	16	15	32	52	74
50	93	114	134	161	20	21	42	62	89
63	93	114	134	161	20	16	37	57	84



ø80, ø100/MGPM, MGPL Dimensions (mm)

1 in = 25.4 mm



MGPM, MGPL Common dimensions

Bore size (mm)	Standard stroke (mm)	B	C	DA	FA	FB	G	GA	GB	GC	H	HA	J	JA	JB	K	L	MM	ML	NN	OA	OB	PA	PB	PW	Q	R
80	25, 50, 75, 100, 125, 150, 175, 200	96.5	56.5	25	22	18	91.5	19	15.5	14.5	202	M12	45.5	38	7.5	46	54	M12 x 1.75	25	M12 x 1.75	10.6	17.5	14.5	25.5	74	52	174
100	250, 300, 350, 400	116	66	30	25	25	111.5	23	19	18	240	M14	55.5	45	10.5	56	62	M14 x 2.0	31	M14 x 2.0	12.5	20	17.5	32.5	89	64	210

Bore size (mm)	S	T	U	VA	VB	WA				WB				X	YY	YL	Z		
						25st or less	Over 25st to 100st	Over 100st to 200st	Over 200st to 300st	Over 300st	25st or less	Over 25st to 100st	Over 100st to 200st					Over 200st to 300st	
80	75	198	156	180	140	28	52	128	200	300	42	54	92	128	178	100	M12 x 1.75	24	28
100	90	236	188	210	166	48	72	148	220	320	35	47	85	121	171	124	M14 x 2.0	28	11

MGPM (slide bearing)/Dimensions A, DB, E

Bore size (mm)	A			DB	E		
	50st or less	Over 50st to 200st	Over 200st		50st or less	Over 50st to 200st	Over 200st
80	115	142	193	30	18.5	45.5	96.5
100	137	162	203	36	21	46	87

MGPL (ball bushing)/Dimensions A, DB, E

Bore size (mm)	A				DB	E			
	25st or less	Over 25st to 50st	Over 50st to 200st	Over 200st		25st or less	Over 25st to 50st	Over 50st to 200st	Over 200st
80	109.5	130	160	193	25	13	33.5	63.5	96.5
100	121	147	180	203	30	5	31	64	87